ORIGINAL

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In The Matter of	)	
	)	
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service	)	**ET Docket No. 95-18**

To: The Commission

RESPONSE OF THE AMERICAN PETROLEUM INSTITUTE TO SUPPLEMENTAL COMMENTS OF COMSAT CORPORATION

The American Petroleum Institute ("API"), by its attorneys and pursuant to Section 1.415(d) of the Rules and Regulations of the Federal Communications Commission ("Commission" or "FCC"), hereby respectfully submits this Response to the Supplemental Comments filed by COMSAT that addressed issues raised in the Commission's Notice of Proposed Rule Making ("Notice")[1/] and at the 1995 World Radiocommunications Conference ("WRC-95").

[1/] Notice of Proposed Rule Making, ET Docket No. 95-18, 10 FCC Rcd 3230, 60 Fed. Reg. 11644 (March 2, 1995).

I. BACKGROUND

1. In its Notice, the Commission proposed to dedicate spectrum in the 2.1 GHz band for new Mobile Satellite Services ("MSS") and to relocate incumbent Fixed Services ("FS") and Broadcast Auxiliary Services users. Specifically, the Commission proposed to reallocate the band 2160-2200 MHz for use by MSS. In Comments and Reply Comments filed in this proceeding last summer, COMSAT opposed relocation of incumbents on the basis that it would be too expensive. COMSAT asserted that MSS portable handheld units could share the spectrum with FS. In Reply Comments, API and other FS users strongly opposed COMSAT's sharing proposal on the basis that no scientific evidence existed to demonstrate COMSAT's view that FS/MSS sharing in the 2.1 GHz band is technically feasible.

2. As a result of the feedback which COMSAT received from FS users' Reply Comments, COMSAT indicated that it would work to modify its computer simulation software to more accurately measure the effect of sharing on FS operations. Exhibit A provides examples of the interference modeling work which COMSAT said it would perform. In addition, a few discussions were held with FS users to gauge the exact nature of FS system operations in the 2.1 GHz

band. API representatives participated in these discussions. API members and other FS users were under the impression that these discussions were intended to provide information that would result in development of computer simulation software by COMSAT. These FS users expected to be afforded the opportunity to review any sharing simulation and to critique it on a scientific basis. It is puzzling to API that, nine months after Reply Comments were filed and a full year after the Notice was first released, COMSAT has still not provided any computer simulation or other study to the Commission or the FS community which would demonstrate COMSAT's claim that sharing is feasible between its proposed ICO handheld portable MSS units and existing FS systems in the 2.1 GHz band. Instead, COMSAT filed its recent Supplemental Comments; this filing is devoid of scientific data.

II. RESPONSE

A. Further Study of COMSAT's Proposed MSS System Is Needed

1. The International Community is currently studying the sharing issue

3. API believes that COMSAT misinterprets the results of WRC-95; contrary to COMSAT's belief, WRC-95 did

not conclude that sharing between COMSAT's proposed MSS system and existing FS users is feasible in the 2.1 GHz band. Instead, WRC-95 developed preliminary criteria for power flux density and other parameters to be used in conducting sharing studies, and called upon the international community to develop and submit sharing studies at WRC-97.

4. Thus, with the one minor exception that WRC-95 called on the international community to study this problem, COMSAT's Supplemental Comments merely reiterate positions taken by COMSAT earlier in this proceeding, to which API and other FS users have already responded. The purpose of the interim discussions between COMSAT and FS users was to assist COMSAT to develop technical simulation software in order to examine the MSS/FS sharing question. However, COMSAT's Supplemental Comments do not provide any additional technical data or other scientifically verifiable information to support its hypothesis that sharing is, in fact, feasible in the 2.1 GHz band between its proposed portable, handheld MSS units and FS incumbents.

5. Instead, COMSAT attempts to end-run the engineering problems presented by coordination of thousands of portable, handheld MSS units with fixed terrestrial

microwave links. Specifically, COMSAT represents that WRC-95 concluded that sharing was feasible, when in fact **WRC-95 concluded that further study of the feasibility of sharing is needed**. COMSAT apparently overlooks three vital documents contained in the WRC-95 Final Report: Recommendation 717 (which API provides as Exhibit B), Section 1.9.1 of Resolution GT PLEN-3 (which API provides as Exhibit C), and the Annex to Resolution GT PLEN-4 (which API provides as Exhibit D). These three documents clearly explain that additional studies are "urgently" needed to resolve the question of the feasibility of sharing between MSS and FS in bands below 3 GHz, including the 2.1 GHz band, in preparation for WRC-97.

6. Moreover, the ITU-R clearly stated, as Exhibit E indicates, that:

> Recommendation 717 is included in Section 1.9.1 of the WRC-97 agenda . . . and that Resolution COM5-10 [which COMSAT relies upon as a conclusive document] is referred to as an urgent issue in the annex to Resolution GT PLEN-4. Therefore, an input to the CPM-97 on this issue should be prepared.

7. Thus, WRC-95 sensibly called upon the international community to study the issue at length and to submit such studies to WRC-97. In response to this mandate,

the ITU instructed each country to work within the framework of Study Groups 8 and 9 to develop these studies. (See Exhibit C). Accordingly, the United States has charged United States Study Group ("USSG") 9D with responsibility for studying the issue of MSS/FS sharing in preparation for the United States' official position at WRC-97.[2/] (See Exhibit F.)

2. COMSAT has not demonstrated that its MSS system can share with FS

8. In its Supplemental Comments, COMSAT specifically alleges that it has demonstrated that technical studies COMSAT has performed show that sharing is feasible. COMSAT at 3, 13. To date, API has not seen a single study by COMSAT, or any other party, which shows that sharing is, in fact, feasible between COMSAT's proposed system and FS

[2/] Study Group 9D held its first meeting January 10, 1996, at which both John Reardon of API and Sam Nguyen of COMSAT were present. At this meeting, COMSAT attempted to introduce a one page document which essentially stated that the FS/MSS sharing issue had been resolved by COMSAT in computer simulations. This document, however, provided no data and no software; it was therefore refused recognition by the Study Group 9D chairman, Alex Latker of the FCC.

When COMSAT filed its Supplemental Comments, COMSAT failed to serve Alex Latker with its pleading; API has provided Alex Latker with a copy and requests the Commission to coordinate this matter with him.

users in the 2.1 GHz band. API urges COMSAT to provide these alleged studies for the scrutiny of the Commission and FS users.

9. COMSAT declares that the international community has thoroughly studied this issue since WARC-92. In fact, the international community is currently studying this issue in preparation for WRC-97.

10. COMSAT admits that FS users will inevitably have to relocate, but COMSAT does not want to pay for that relocation. Accordingly, COMSAT's Supplemental Comments should be dismissed until such time as COMSAT provides to the Commission and United States Study Group 9 a complete technical study and/or the long-awaited computer simulation alluded to in footnote 34 of COMSAT's Supplemental Comments.

B. MSS should be treated the same as PCS

11. The Commission should treat all CMRS in a "substantially similar" fashion. Like PCS, MSS providers should be required to pay for the costs of relocation of microwave incumbents. To do otherwise would be to give MSS providers an unfair advantage in the CMRS marketplace.

12. From a consumers' viewpoint, there will be no identifiable difference between a PCS handheld unit and an MSS handheld unit: both will be portable, handheld, and highly mobile in nature. From an FS incumbent's viewpoint, there will also be no difference between a PCS and MSS handheld unit: both will be highly capable of causing harmful interference to the FS incumbent's system, both can appear at any place and at any time, and both will operate in microwave incumbent spectrum as a result of the Emerging Technologies proceeding, ET Docket No. 92-9. Thus, even if WRC-95 provided for sharing, the United States should recognize that its 2.1 GHz band is heavily encumbered with FS systems which deserve to be relocated in the same manner that incumbents are now being relocated from the band 1850-1990 MHz.

13. Simply because some countries may, in the future, decide to accept MSS/FS sharing in the 2.1 GHz band does not mean that this solution is best for the United States. Unlike the majority of the 130 countries in attendance at WRC-95, the United States is a highly developed, industrialized country. Petroleum and gas companies, as well as electric utilities, railroads and governmental entities depend upon complex and efficient microwave systems which they built themselves to serve the infrastructure

needs of this country. COMSAT's suggestion that these incumbents should be phased out of the 2.1 GHz band with no reimbursement for their operating systems is akin to information highway robbery.

14. Microwave incumbents have traditionally purchased systems which last in terms of decades, not months and years. Most of these microwave systems are capable of operating beyond the year 2005. The Commission should not allow MSS proponents to crowd out incumbents and force incumbents to pay for their own relocation. Instead, the Commission should adhere to its plan to treat MSS like PCS, complete with reimbursement for incumbent licensees.

III. CONCLUSION

15. WRC-95 requested the international community to conduct additional studies of the sharing issues raised in Recommendation 717. COMSAT overlooks the need for additional study of the sharing question, particularly as it applies to COMSAT's proposal for handheld, portable ICO units. Should the Commission determine that MSS is needed in the 2.1 GHz band, API urges the Commission to implement the proposal to reallocate FS users at the expense of MSS providers. In a communications environment in which small

businesses have bid over $8 billion for BTA-sized PCS licenses, COMSAT's plea that $3 billion is a prohibitively high cost rings hollow. API is sure that, if COMSAT does not have the money to relocate incumbents, there are plenty of other MSS providers who do have sufficient funds and are willing to do the job properly.

WHEREFORE, THE PREMISES CONSIDERED, the American Petroleum Institute respectfully submits the foregoing Response to COMSAT's Supplemental Comments and requests the Federal Communications Commission take action in a manner consistent with the views expressed herein.

Respectfully submitted,

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Dated: April 5, 1996

cc:Mail for: Dave Weinreich

Subject: Minutes of 2 GHz Transition Meeting on March 10
From: Sam Nguyen 3/14/95 10:26 AM
To: Jeffrey Binckes
To: Dan Swearingen
To: Nancy Thompson at Server2
To: Jack Hannon at Server2
To: Dave Weinreich at CTS_PO4
To: Raymond Crowell at CWS-OTHER

Introduction

The meeting was attended by representatives from Columbia Spectrum Management, MSS community (AMSC, COMSAT, IRIDIUM) and Fixed Service (National Association of Broadcasters, American Petroleum Institute and Utilities Telecommunications Council).

The purpose of the meeting was to continue the exchange of information on the usage of the 2 GHz by the fixed service and the discussion on the options of relocating versus rechannelizing Electronic News Gathering (ENG) channels to accommodate MSS uplinks, plus a description of an interference model available at COMSAT for analyzing frequency sharing between MSS and fixed service.

Another topic introduced by the Chairman was the FCC Order granting the request by the MSS community to have the Comment and Reply dates of the 2 GHz NPRM extended till May 5 and June 6, respectively.

Fixed Service - Common Carrier and Private Operational Fixed

Don Campbell from the FCC informed the group that the FCC would have the database of all of the U.S. spectrum assignments from 806 MHz and above available on the Internet some time during the week of March 13. This database would be current as of February 7, 1995 in most cases. However, Campbell cautioned that some of the data (e.g. Common Carrier) might still not be as current as those available from Comsearch because of the recent backlog experienced by the FCC in updating the data and the growth in license assignments for the Common Carrier. Campbell also indicated that Bellcore, as a member of the National Spectrum Management Association (NSMA), was in the process of developing a "reader-writer" program that could be used by the Fixed Service, including Broadcast Auxiliary Service, to obtain pre-formatted information on the usage of the spectrum by the different users.

This database would be useful not only for the FS but also for the MSS in assessing the sharing feasibility between the two services. The chairman provided a description of an interference model available from COMSAT to analyze the interference from the MSS satellite downlink into the FS systems and from the FS systems into the MSS satellite uplink. The model could be configured either using data based on typical traffic levels or on real FS system locations and characteristics or on both. The critical parameters needed for the FS would be: transmit EIRP, transmit peak gain, operating bandwidths, off-axis gain pattern, path length, and required C/I criteria. The results of the runs would be statistical in nature in showing: on how often a specified interference criteria would be met, the

distribution of interference level against frequency of occurrence; and the interference level against time.

Representatives from FS (John Reardon of API and Sean Stokes of UTC) felt that the interference model seemed to be a useful tool and should be reviewed by NSMA, the technical frequency coordinator for FS, including POF and CC. Once the model had been accepted by NSMA as the analytical tool for assessing interference into FS, it could be included in the Telecommunication Standard Bulletin as a new section dealing with MSS sharing with FS. NSMA would hold its next meeting on April 25, 1995.

Broadcast Auxiliary Service - Electronic News Gathering (ENG)

Tom Lusk of Columbia Spectrum Management confirmed that the cost for retuning the ENG equipment for a 16 MHz channel bandwidth would be minimal depending on the age of the equipment. According to Lusk, the new equipment would only require a change in the EPROM of the frequency generator. Kelly Williams indicated that NAB would need to obtain a proposal from the ENG equipment manufacturer detailing the exact changes required for both old and new transmitters and receivers for further consideration of this proposal. Williams reiterated that NAB would prefer shifting the first two ENG channels to 2110-2150 MHz over COMSAT's proposal to reduce the ENG channel bandwidths or the proposal to relocate all of the ENG channels at 2 GHz to higher bands at 4.5, 7 or 13 GHz, as suggested by Motorola.

Follow-on Actions

Comsat would solicit Microwave Radio Corp., the largest ENG equipment manufacturer, to provide a cost/technical proposal for retuning the ENG channel to 16 MHz. In addition, Comsat would perform interference modeling of MSS downlink into a real FS system consisting POF and CC obtained from the FCC latest database.

The next meeting will be held at the COMSAT Conference room, 1899 "L" Street, April 10, at 1:30-3:30 pm.

RECOMMENDATION 717 (REV.WRC-95)

FREQUENCY SHARING IN BANDS SHARED BY THE MOBILE-SATELLITE SERVICE AND THE FIXED, MOBILE AND OTHER TERRESTRIAL SERVICES BELOW 3 GHz

The World Radiocommunication Conference (Geneva, 1995),

considering

a) that the World Administrative Radio Conference (Malaga-Torremolinos, 1992) made frequency allocations for the mobile-satellite service shared with other terrestrial services below 3 GHz;

b) that this Conference has adopted sharing criteria for these bands allocated to the mobile-satellite service which require further examination;

c) that both geostationary and non-geostationary satellites may be operated in the mobile-satellite service;

d) that the Radiocommunication Assembly (Geneva, 1995) approved Recommendations ITU-R IS.1141, IS.1142 and IS.1143, while identifying certain issues related to frequency sharing between the mobile-satellite service and terrestrial services requiring further study, some of them urgent (see Questions ITU-R 201/8 and 118-1/9),

recommends that ITU-R

study the remaining and urgent issues relating to frequency sharing between the mobile-satellite service and terrestrial services below 3 GHz and report to the 1997 World Radiocommunication Conference (WRC-97) through the Conference Preparatory Meeting,

recommends that administrations

submit contributions relating to these studies to ITU-R, as a matter of urgency,

recommends that the 1997 World Radiocommunication Conference

address the above issues and take appropriate action on them.

RESOLUTION No. 718 [GT PLEN-3]

AGENDA FOR THE 1997 WORLD RADIOCOMMUNICATION CONFERENCE

The World Radiocommunication Conference (Geneva, 1995),

considering

a) that in accordance with Nos. 118 and 126 of the Convention of the International Telecommunication Union (Geneva, 1992), and having regard to Resolution **1** of the Additional Plenipotentiary Conference (Geneva, 1992), the general scope of the agenda for a world radiocommunication conference should be established four years in advance and a final agenda shall be established two years before the conference;

b) Resolution **3** of the Plenipotentiary Conference (Kyoto, 1994);

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARC) and world radiocommunication conferences (WRC),

recognizing

that this Conference identified a number of urgent issues requiring further examination by the 1997 World Radiocommunication Conference (WRC-97),

resolves

to recommend to the Council that a World Radiocommunication Conference be held in Geneva in late 1997 for a period of four weeks, with the following agenda:

1 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-95, to consider and take appropriate action in respect of the following topics:

1.1 requests from administrations to delete their country footnotes or to have their country's name deleted from footnotes, if no longer required, within the limits of Resolution [COM4-1];

1.2 issues arising from the WRC-95 consideration of the VGE Report taking into account the following Resolutions [COM4-3];

1.3 review of Appendix **S7 [28]** to the Radio Regulations, taking into account Resolution **60 (WARC-79)**, Resolution **712 (Rev.WRC-95)** and Recommendation **711 (WARC-79)**;

1.4 examination of, and taking necessary decisions on, the question of the HF bands allocated to the broadcasting service in the light of developments to date and the results of the studies carried out by the Radiocommunication Sector, and review of Article **17 [S12]** of the Radio Regulations in accordance with Resolution [COM4-2] and Resolution [GT PLEN-2];

1.5 based on the results of the studies to be carried out under Recommendation [GT PLEN-B], consider changes to the Radio Regulations, as

appropriate;

1.6 matters related to the maritime mobile and maritime mobile-satellite services:

1.6.1 the provisions of Chapters **IX** [Appendix **S13**] and **NIX** [Chapter **SVII**] of the Radio Regulations, as stipulated in Resolution **331 (Mob-87)**, and appropriate action in respect of the issues dealt with in Resolutions **200 (Mob-87)**, **210 (Mob-87)** and **330 (Mob-87)**, including maritime certification and licensing issues related to Chapter [**SIX**] of the Radio Regulations, taking into account that the global maritime distress and safety system (GMDSS) shall be fully implemented in 1999;

1.6.2 the use of Appendix **18 [S18]** to the Radio Regulations in respect of the VHF band for maritime mobile communications, and the use and extension of UHF channels contained in **S5.287**, taking into account Resolution **310 (Mob-87)**;

1.6.3 Article **61 [S53]** of the Radio Regulations relating to the order of priority of communications in the maritime mobile service and in the maritime mobile-satellite service;

1.6.4 review, and if necessary, revision of the provisions related to the NAVTEX coordination in order to release the ITU from the obligation to undertake operational coordination for this service operating on 490 kHz, 518 kHz and 4 209.5 kHz, in the light of the consultations undertaken with the International Maritime Organization (IMO) Resolution [COM4-7];

1.6.5 use of the new digital technology in the maritime radiotelephony channels;

1.7 review of Appendix 8 to the Radio Regulations taking into account Recommendation **66 (Rev.WARC-92)**;

1.8 the possible deletion of all secondary allocations from the band 136 - 137 MHz, which is allocated to the aeronautical mobile (R) service on a primary basis, in accordance with Resolution **408 (Mob-87)** and in order to meet the special needs of the aeronautical mobile (R) service;

1.9 taking into account the needs of other services to which the relevant frequency bands are already allocated:

1.9.1 pressing issues concerning existing and possible additional frequency allocations and regulatory aspects as related to the mobile-satellite and fixed-satellite services including consideration of WRC-95 Resolutions [PLEN-1], [COM5-4, COM5-6, COM5-7, COM5-8 COM5-9, COM5-11], [GT PLEN-6] and Recommendation **717 (Rev.WRC-95)**;

1.9.2 Resolutions **211 (WARC-92)**, **710 (WARC-92)** and Resolution **712 (Rev.WRC-95)**;

1.9.3 Recommendation **621 (WARC-92)**;

1.9.4 frequency allocation issues related to the needs of the earth exploration-satellite service, which are not covered in the above-mentioned Resolutions, namely:

1.9.4.1 allocation of frequency bands above 50 GHz to the earth exploration-satellite (passive) service:

1.9.4.2 frequency allocations near 26 GHz to the earth exploration-satellite service (space-to-Earth);

1.9.4.3 the existing frequency allocations near 60 GHz and, if necessary, their re-allocation, with a view to protecting the earth exploration-satellite (passive) service systems operating in the unique oxygen absorption frequency range from about 50 GHz to about 70 GHz;

1.9.5 allocations to the space research service (space-to-space) near 400 MHz;

1.9.6 the identification of suitable frequency bands above 30 GHz for use by the fixed service for high density applications;

1.10 review of Appendices **30 [S30]** and **30A [S30A]** for Regions 1 and 3 in response to Resolution **524 (WARC-92)**, and taking particular account of *resolves* 2 of that Resolution, in accordance with Resolution [GT PLEN-1] (WRC-95) and taking into account Recommendation [COM4-B];

2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations which have been communicated by the associated Radiocommunication Assembly, in accordance with Resolution [COM4-5]; and decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution [COM4-4];

3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

4 in accordance with Resolution **94 (WARC-92)**, to review those resolutions and recommendations of world administrative radio conferences and world radiocommunication conferences which are relevant to agenda items 1 and 2 above with a view to their possible revision, replacement or abrogation;

5 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention (Geneva, 1992);

6 to identify those items requiring urgent actions by the radiocommunication study groups in accordance with Resolution [GT PLEN-BB];

7 to consider the final report of the Director of the Radiocommunication Bureau on activities related to Resolution **18** (Kyoto, 1994);

8 in accordance with Article 7 of the Convention (Geneva, 1992):

8.1 to consider and approve the report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since the last Conference;

8.2 to recommend to the Council items for inclusion in the agenda for the 1999 World Radiocommunication Conference, and to give its views on the preliminary agenda for the 2001 Conference and on possible agenda items for future conferences.

invites the Council

to establish the agenda and make provision for WRC-97 and to initiate as soon

as possible the necessary consultation with Members,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-97,

instructs the Secretary-General

to communicate this Resolution to concerned international and regional organizations.

ANNEX TO RESOLUTION GT PLEN-4

Urgent studies required in preparation for WRC-97

- Sharing studies concerning the possible use of the band 1 675 - 1 710 MHz by the mobile-satellite service, in accordance with Resolution **213 (Rev.WRC-95)**.
- Issues dealing with allocations to space services, in accordance with Resolution **712 (Rev.WRC-95)**.
- Issues relating to frequency sharing between the mobile-satellite service and terrestrial services at frequencies below 3 GHz, in accordance with Recommendation **717 (Rev.WRC-95)**.
- Criteria to be applied for the non-GSO fixed-satellite service sharing situations listed in *considering further* of Resolution [PLEN-1].
- Sharing between the FSS and the FS in the 20 GHz band when used bidirectionally by the FSS to provide feeder links for non-geostationary satellite systems in the mobile-satellite service, in accordance with Resolution [COM5-1].
- Calculation of the power flux-density at the geostationary orbit in the 7 GHz band used for feeder links for non-geostationary systems of the mobile-satellite service in the space-to-Earth direction of transmission, in accordance with Resolution [COM5-2].
- Allocation of frequencies to the FSS in the band 15.4 - 15.7 GHz for use as feeder links for non-geostationary-satellite networks operating in the mobile-satellite service, in accordance with Resolution [COM5-4].
- Allocation of frequencies to the fixed-satellite service in the band 15.45 - 15.65 GHz (Earth-to-space) for use as feeder links for non-geostationary satellite networks operating in the mobile-satellite service, in accordance with Resolution [COM5-6].
- Development of interference criteria and methodologies for coordination between feeder links for non-GSO MSS networks and GSO FSS networks in the 20 GHz and 30 GHz bands, in accordance with Resolution [COM5-7].
- Power flux-density level applicable in frequency band 137 - 138 MHz shared by the mobile-satellite service and the terrestrial services, in accordance with Resolution [COM5-5].
- Determination of coordination areas between geostationary and non-geostationary feeder-link earth stations of different administrations operating in opposite directions of transmission, in accordance with Recommendation [COM5-C].
- Sharing studies concerning the use of the bands below 1 GHz by the non-GSO mobile-satellite service, in accordance with Resolution [COM5-8].

EXHIBIT E

INTERNATIONAL TELECOMMUNICATION UNION

RADIOCOMMUNICATION
STUDY GROUPS

Document 8D/XX-E
Document 9D/YY
17 November 1995
Original: English only

Draft
(Version 2)

Chairmen of ITU-R Study Groups 8 and 9

FURTHER STUDIES ON FREQUENCY SHARING BETWEEN THE MOBILE-SATELLITE SERVICE AND THE FIXED SERVICE BELOW 3 GHz

1. Introduction

Following the decisions of the second Radiocommunication Assembly (Geneva, October 1995), and taking into account the decisions of the 1995 World Radiocommunication Conference (Geneva, October-November 1995) (WRC-95), this contribution suggests a future working arrangement for joint study by Working Parties 8D and 9D on frequency sharing between the mobile-satellite service (MSS) and the fixed service (FS) below 3 GHz.

2. Decisions of the 1995 Radiocommunication Assembly and WRC-95

2.1 The 1995 Radiocommunication Assembly approved the draft Recommendations [Doc. 2/6], [Doc. 2/7] and [Doc. 2/8] submitted from Study Group 2. They are now official Recommendations ITU-R IS.1141, IS.1142 and IS.1143, respectively, all of which deal with MSS/FS frequency sharing.

Their titles are as follows:

Rec. ITU-R IS.1141 Sharing in the frequency bands in the 1-3 GHz frequency range between the non-geostationary space stations operating in the mobile-satellite service and the fixed service

Rec. ITU-R IS.1142 Sharing in the frequency bands in the 1-3 GHz frequency range between geostationary space stations operating in the mobile-satellite service and the fixed service

Rec. ITU-R IS.1143 System specific methodology for coordination of non-geostationary space stations (space-to-Earth) operating in the mobile-satellite service with the fixed service

2.2 In addition, the Assembly decided that further studies on MSS/FS sharing should be jointly carried out by Study Groups 8 and 9, and that the above three ITU-R Recommendations should be assigned to Study Groups 8 and 9.

2.3 The WRC-95 adopted the following Resolutions and Recommendation which are related to MSS/FS sharing:

Resolution 46 (Rev. WRC-95) Interim procedures for the coordination and notification of frequency assignments of satellite networks in certain space services and the other services to which certain bands are allocated.

Resolution COM5-10 Use of frequency bands 1 980 - 2 010 MHz and 2 170 - 2 200 MHz in all three Regions, and 2 010 - 2 025 MHz and 2 160 - 2 170 MHz in Region 2 by the fixed and mobile-satellite services and associated transition arrangements.

Recommendation 717 (Rev. WRC-95) Frequency sharing in frequency bands shared by the mobile-satellite service and the fixed, mobile and other terrestrial radio services below 3 GHz.

It should be noted that the scope of Recommendation 717 (Rev. WRC-95) has been expanded so that it now covers all frequency bands below 3 GHz. This indicates that further study by Study Groups 8 and 9 should cover issues related to the frequency bands below 1 GHz, too.

2.4 Therefore, it is necessary to establish an appropriate joint working arrangement of Study Group 8 (Working Party 8D) and Study Group 9 (Working Party 9D). The following section discusses this matter.

3. Suggested joint working arrangement

3.1 One possible approach for joint study will be to create a Joint Working Party or Joint Task Group according to § 2.7 of the revised Resolution ITU-R 1. But such group should be created only when absolutely necessary, because of its financial implications and additional meetings required.

3.2. In order to minimize the impacts on both participants and the ITU budget, the following approach is suggested, at least for an initial stage, without creating a formal joint group.

Working Party 8D will appoint a Liaison Rapporteur (as defined in § 5.2 of the revised Resolution ITU-R 1) and, if necessary, one or more Rapporteurs (as defined in § 2.11 of the revised Resolution ITU-R 1). For our purpose, it may be more appropriate to use the term "Principal Rapporteur" instead of "Liaison Rapporteur".

The role of the Principal Rapporteur will be to coordinate the work of Rapporteurs and to carry out coordination with WP 9D. The role of a Rapporteur will be to carry out study on a specific subject matter for which WP 8D has a primary responsibility, in close collaboration with an Associate Rapporteur appointed by WP 9D. A number of Associate Rapporteurs may be appointed by WP 8D, too, in order to assist Rapporteurs of WP 9D.

3.3 Similarly, WP 9D will also nominate a Principal Rapporteur and, if necessary, one or more Rapporteurs to work in close collaboration with WP 8D for those items of which WP 9D has primary responsibility, and one or more Associate Rapporteurs to assist WP 8D Rapporteurs.

3.4 The Assembly Document 2/1001 (the report of the Chairman of Study Group 2), in its Annex 1, identified 12 items requiring further study to assist in frequency sharing in the band 1-3 GHz, out of which seven items are related to MSS/FS sharing. In order to carry out the joint study efficiently, it seems appropriate to assign the main responsibility for study of each of the seven items to either WP 8D or WP 9D.

Along this line, the following assignment is suggested:

A Study items for which WP 8D is mainly responsible

A1 The development of the standard computer program (SCP) for the coordination procedure (see Recommendation ITU-R IS.1143) (see Note 1)

A2 The development of the computer program for use to facilitate bilateral coordination of the non-GSO MSS (space-to-Earth) with the fixed service (see Notes 1 and 2)

B Study items for which WP 9D is mainly responsible

B1 Consideration of the standard reference bandwidth for interference calculations e.g. 1 MHz, 4 kHz, or others depending on interference scenarios

B2 The development of the pfd limits for the MSS (space-to-Earth) systems to share with the FS analogue systems in the frequency bands 1 492 - 1 525 and 1 525 - 1 530 MHz (see Note 3)

B3 The aggregate interference of point-to-multipoint fixed service at low e.i.r.p. to the MSS (space-to-Earth)* needs study for a larger number of systems

B4 Considerations of combinations of non-GSO CDMA/FDMA and TDMA/FDMA systems for computation of the aggregate interference to victim fixed service receivers (see Recommendation ITU-R IS.1143) (see Note 4)

C Study items which require further consideration before assignment (see Note 6)

C1 Consideration of technical and operational matters in the phased transitional approach for bands shared between the MSS (Earth-to-space) and the fixed service (see Note 5)

3.5 It should be noted that some studies cannot be carried out without close cooperation from the other side. For example, the item B3 requires definition of satellite parameters by WP 8D. In this case, it is definitely necessary to appoint WP 8D Associate Rapporteur for item B3.

Note 1 - Study items A1 and A2 should be jointly developed to result in a single computer program that would accommodate replacing the FS reference parameters with the specific parameters of the FS system requiring bilateral coordination.

Note 2 - FS system parameters to be used in bilateral coordination should be developed mainly by WP 9D.

Note 3 - The WRC-95 adopted coordination thresholds for the FS analogue systems in the bands 1 492 - 1 525 and 1 525 - 1 530 MHz. Therefore, further study on item B2 may not be necessary.

Note 4 - It may be desirable to take account of B4 in developing computer programs for A1 and A2.

Note 5 - In this connection, the WRC-95 adopted Resolution COM5-10 (dealing with transitional arrangements) which requested the ITU-R to develop the necessary planning tools as soon as possible to assist those administrations considering a replanning of their terrestrial fixed networks in the 2 GHz range. WP 9D should consider what planning tools can be provided.

Note 6 - Additional issues, including those related to the frequency bands below 1 GHz should be included, as appropriate.

4. Responsible Study Group for adopting draft Recommendations

4.1 Even if a joint study is conducted under the supervision of two Study Groups, it is desirable that only one responsible Study Group will formally adopt a draft Recommendation in order to simplify the approval process.

4.2 An appropriate principle for determining the responsible Study Group may be as follows (see Note 7):

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* Probably "(Earth-to-space)" is correct instead of "(space-to-Earth)" as appears in Doc. 2/1001.

- a draft Recommendation giving constraints on, or protection criteria for, MSS will be adopted by Study Group 8;
- a draft Recommendation giving constraints on, or protection criteria for, FS will be adopted by Study Group 9;
- in case of a mixed draft Recommendation, the responsible Study Group will be decided through consultation.

4.3 All of the Recommendations ITU-R.IS.1141, IS.1142 and IS.1143 are of a mixed type. However, if the contents are closely examined, it seems appropriate that Study Group 8 be responsible for these three Recommendations. (In future, it seems appropriate that these Recommendations include a statement that any revision of the Recommendation should be jointly undertaken by Study Groups 8 and 9).

4.4 Attention should be also given to the examination of the desirability and feasibility of rearranging a Recommendation into two parts, one for Study Group 8 and another for Study Group 9.

4.5 It is interesting to note that the Study Group responsible for study of a certain issue and the responsible Study Group for the relevant Recommendation may not necessarily be the same. For example, if a study on item B1 results in a new reference bandwidth, it will lead to the modifications of Recommendations ITU-R.IS.1141, IS.1142 and IS.1143. This fact demonstrates the need of close cooperation between WP 8D and WP 9D.

Note 7 - For example, in case of FSS to FS interference in SF series Recommendations, Rec. ITU-R SF.615 (Maximum allowable values of interference from FSS to FS) falls in the category of "FS protection criteria", and Rec. ITU-R SF.358 (Maximum pfd limit for satellites) gives a constraint on FSS.

5. Conduct of studies

5.1 Studies should be carried out as much as possible by correspondence using modern means of communication, including E-mail. Principal Rapporteurs and other Rapporteurs should keep close contact with each other. The joint study should demonstrate an efficiency of WP 8D and WP 9D participants.

5.2 The two Principal Rapporteurs are expected to establish a work plan with the agreement of WP 8D and WP 9D, which should be placed under constant supervision and review. If really necessary, the two Principal Rapporteurs may propose to organize (an informal) joint meeting to accelerate and/or finalize the studies. This joint meeting may take advantage of normal meetings of either WP 8D or WP 9D.

5.3 Rapporteurs may be assisted by other experts. For this purpose, it seems appropriate to prepare a list of participants who wish to communicate with each Rapporteur. Such participants may come from both Study Groups.

5.4 In principle, all studies (except for those which may be found not urgent) should be completed within this study period.

5.5 Needless to say, a maximum use should be made of normal meetings of WP 8D and of WP 9D. Principal Rapporteur and other Rapporteurs of WP 8D are invited to participate in the meetings of WP 9D and vice versa. The March 1996 meetings of Working Parties 8D and 9D are in overlap for several days. Such opportunity should be used for an effective joint study.

5.6 If necessary, the following provision of Resolution ITU-R 1 may be also utilized.

"8.7 Contributions for consideration by correspondence submitted well before the date of the meeting should be distributed promptly by the Director".

5.7 In future new study issues may emerge which are not foreseen at the present time. They will also require a joint study by WP 8D and WP 9D in a similar way. This principle may also apply to the case where a third party Study Group is involved.

5.8 Source codes for all computer programs developed for implementing the relevant study items should be made available for review by Working Parties 8D and 9D.

6. **Provisional nomination of Rapporteurs**

Taking advantage of the WRC-95, the Chairmen of Study Groups 8 and 9 made an informal consultation with delegates attending the Conference. In order to accelerate the studies, the following provisional nomination was suggested:

Principal Rapporteurs:

for WP 8D: United States of America ?

for WP 9D: United States of America

Rapporteurs:

	WP 8D (Rapporteur)	WP 9D (Associate Rapporteur)
A1	France	
A2	Japan	

	WP 8D (Associate Rapporteur)	WP 9D (Rapporteur)
B1		Japan
B2		
B3		United Kingdom
B4		[Canada]

	WP 8D	WP 9D
C1		

7. **Preparation of an input to the CPM-97**

Recommendation 717 (Rev. WRC-95) is included in § 1.9.1 of the WRC-97 agenda (see Resolution GT PLEN-3 of WRC-95) and Resolution COM5-10 is referred to as an urgent issue in the annex to Resolution GT PLEN-4. Therefore, an input to the CPM-97 on this issue should be prepared.

Resolution 46 (Rev. WRC-95) is not explicitly included in the WRC-97 agenda, but in view of their urgency, it seems necessary to prepare an input to the CPM-97 on these issues too. Working Parties 8D and 9D are requested to make an appropriate arrangement for such preparations.

EXHIBIT F

United States Department of State

Washington, D.C. 20520

ASSIGNMENT OF WRC-97 STUDIES

MSS Issues - WP 8D, (lead) 8A, 8B, 8C, 7C, 7D, 9D, 10, 11

Res. GT PLEN-6)
Res. Com 5-5)
Res. Com 5-8)
Res. Com 5-9

(non-WRC-97 Issues)
Res. Com 5-10)
Res. Com 4A
Res. Com 5A

9D - Take lead in Little Leo group for U.S. internationally, paper go to all other conjunct Study Groups (i.e. 8A, 7C, 7D, 9D, 10, 11 etc)

Feeder Links - WP 4A plus others as shown,

Res. PLEN-1 - 4B, 4-9/S
Res. PLEN-5 - 7D, 7-8/R, 8C
Res. PLEN-4 - 8D
Res. Com 5-2
Res. Com 5-4 - 7D, 8C
Res. Com 5-6 - 8C
Res. Com 5-7 - 8D, 4B, 4-9/S
Rec. Com 5-B - 4B
Rec. Com 5-C
Res. 18

(non-WRC-97 Issues)
Res. Com 5-3 - 8D

Windprofilers - TG 8/2, 7C, 8A, 8C, 11C
Res. 621

EES systems and meteorological systems - WP 7C

Res. 211
Res. 213
Res. 710
Res. Com 5-8, (401-406 MHz)

FS sharing with other services except FSS - 9D, 8A, 8B, 8D

Rec. 717

HF Broadcasting Planning - TG 10/5

Res. GT PLEN 2
Res. Com 4-2